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Highway Traffic: Page 20

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Briefly...

A "STOP-WATCH" study made by a Tucson newspaperman justified his contention that people make unnecessary use of automobiles for short trips and waste a great deal of time driving around in search of parking space. In an editorial appearing in "The Huachuca Scout," Warde H. Ford pointed out that he was able to walk the one block between his home and a store 16 seconds faster than it took him to drive the same distance on the same congested street.

AIR WING OF the Minnesota Highway Patrol has been increased by the addition of a third light plane. According to Chief Paul Martz, the addition of the new plane has greatly increased the usefulness and flexibility of the air wing in traffic control and enforcement activity.

OPERATION of tandem truck trailers on the 559-mile New York Thruway system on a permanent basis has been approved by the Thruway Authority. The tandems, each composed of a heavy duty truck-tractor hitched to two regular size trailer units, were under intensive observation during a four-month period by Authority personnel, state police, economic consultants, and traffic experts.

NEW USE for the seat belt installed on the passenger side of the front seat in one-man patrol cars has been found by the Glendale, California, police department. Prisoners being transported to the station for booking are handcuffed, then "safety belted" to the seat.

A CHECK of 2,500 consecutive ambulance runs by the Ontario Safety League disclosed that there was only one case in which a moderate delay in travel could have resulted in death. Haste was deemed to be unnecessary in trans-

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Editorial

SPORTS CARS, ONION JUICE, AND JUSTICE

A RECENT COURT decision in an Ontario traffic case dramatizes the need for a clear understanding of modern scientific detection techniques by the courts, prosecutors, and law enforcement officers if justice is to be fairly and uniformly dispensed.

The defendant, whose hobbies are mathematics and sports car driving, told the court that a radar unit would clock a short car at a speed greater than it is actually traveling.

A radar unit had clocked his 13-foot sports car at 38 mph. He testified that the difference in length between his vehicle and a normal 18-foot model would result in a deviation of 5.92 mph. He claimed this meant he was really traveling within the speed limit. The defendent produced figures worked out with a slide rule, invited the court to have a professional mathematician check his figures. The magistrate said, "I'll give you the benefit of the doubt," and dismissed the case.

Obviously the prosecuting officer in this case was either not alert or lacked adequate technical knowledge. A minimal acquaintance with the fundamentals of radar speed-detection devices would have enabled him to readily demolish the defendant's contentions. No amount of higher-mathematical testimony could have altered the simple fact that a car five feet long would register the same speed as one 25 feet long if they were both in fact traveling at the same speed.

Last February an analogous problem came up in court—this time concerning the legal implications of chemical tests for intoxication. The question arose in a Brooklyn case involving a man from Freeport, Long Island, who was charged with driving while under the influence. After a three-day trial, featuring an aggressive defense attack on the theory and operation of breath-testing devices, a jury returned a verdict of acquittal.

The defense attorney in this case produced evidence to show that his client, a diabetic, was in insulin shock when arrested, and offered medical testimony to the effect that the police breath-testing device could not distinguish between a driver in insulin shock and one in a condition of intoxication; he also "proved" that the spicy juices of onions and garlic had "exactly the same effect" on the chemical used in the device as alcohol does. The attorney demonstrated by putting a chemist on the stand with test tubes filled with the same solution used in the device. He then poured raw onion and garlic juice into the tubes and the solution changed color just as it does when alcohol is added.

Of course both parts of this defense gambit are specious but false. No matter how much garlic and onions one eats, the resultant *odor on the breath* will not affect the chemical solution in the device. If a person (who has not been drinking) is displaying diabetic symptoms, the machine would indicate that no alcohol was present in the blood and a trained operator would immediately recognize that something was seriously wrong with the person taking the test.

The whole difficulty stems from ineffective case preparation. And, to a greater and greater degree, modern case preparation depends on the new scientific aids to investigation. It should be remembered that these aids do not represent substitutes for full and intensive investigation; they should supplement or support the basic investigation.

As newer and more precise scientific techniques and devices for establishing the truth of charges against violators are developed, it will become more and more important for investigating officers and prosecutors to learn everything they can about the elements of these techniques and devices—not only about what they are intended to prove but also about their limitations and the kinds of arguments that may be brought against their use in court. ★

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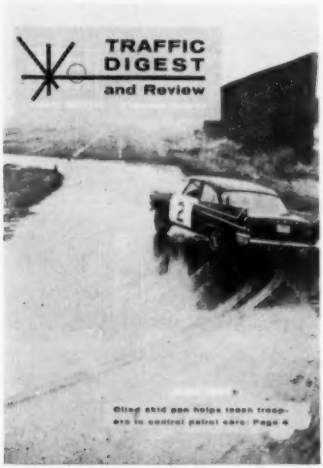

Traffic Digest and Review, the professional journal of the traffic field, is must reading every month for anyone concerned with street and highway traffic. Articles by Traffic Institute staff members and other outstanding authorities keep you informed on the latest developments in enforcement, accident investigation, research, adjudication, motor vehicle administration, and traffic engineering. If you are not now a subscriber, mail in the coupon below and get your own personal copy every month.

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Briefly . . .

(Continued from page 1)

porting the injured in 98.2 per cent of the 2,500 cases studied. In a substantial number of cases a speeding ambulance could have increased the severity of the injuries. The league recommends that ambulances transporting injured persons should observe local speed laws.

A "SAFETY" CAN of gasoline in the trunk of a car equipped with two-way radio is a likely setup for a blast. The first recorded case involved a police car. The patrolman took hold of the hand mike and started to report when a spark from the transmitter set off fumes from the can. Several similar cases have been reported. Most such cans are not made for the high temperatures and closed space of a luggage compartment.

AIR CONDITIONED patrol cars have been requested by Sheriff C. V. Kern, Harris County, Texas, for his 14 deputies. Noting that the county courthouse, where the sheriff's offices and the county jail are located, is air conditioned, Kern told the commissioners' court: "These men work in cars and should be able to enjoy the same comfort as office employees."

MEMBERS and employees of the California Highway Patrol drove patrol vehicles 339,682 miles per recordable accident during the first six months of 1958.

IN AN ADDED effort to aid safety education programs and to help rid highways of irresponsible motorists, the Association of Casualty and Surety Companies has issued two new free informative pamphlets. The first, "Your Youth Traffic Safety Conference," is designed to serve as a guide for conferences in which young drivers from various schools and communities get together to identify common traffic safety problems and look for solutions. The second pamphlet, "The Drinking Driver, Traffic Safety Delinquent No. 1," re-emphasizes the need to correct the evil of motorists who drive under the influence of alcohol.

VARIABILITY OF FIXED POINT SPEED MEASUREMENTS

Research indicates that vehicle speed samples should be collected within fixed time intervals

BY ROBERT P. SHUMATE and RICHARD F. CROWTHER

FOR MANY YEARS a large percentage of accident prevention activity has been concentrated on *speed*. Safety campaigns aimed at reducing traffic accidents, almost without exception, have emphasized speed in relation to accidents. A large proportion of day-to-day activity devoted to control and prevention of accidents is directed at inducing people to drive slower.

During the past two decades much has been written about speed and its probable relationship to traffic accidents. Unfortunately, the great bulk of published material relating to vehicle speeds has been prepared specifically for popular consumption and contains little information of scientific value. Few authoritative materials have been published that deal with the characteristics of speed behavior in general. Practically no one has explored in depth the relative effectiveness of various methods and procedures intended to influence speed behavior.

Highway safety authorities hypothesize a causal relationship between speed and accidents. Several attempts have been made to verify and quantify this relationship with varying degrees of success. Such a causal relationship has not as yet been established with any degree of authority, and before it can be affirmed or refuted, many pressing questions pertaining to speed behavior need answering.

Speed behavior in a traffic stream is most commonly measured through the

Photo of test road section at right shows simulated mail box (barely discernable on left shoulder) containing instrument which sends speed information to observer in concealed car (top photo).

use of the fixed-point measuring techniques. This method involves the use of one of several mechanical or electronic speed-measuring devices currently available. From the speeds themselves, or from various computed statistics, certain inferences can be drawn about speed in the traffic stream under study.

This method holds considerable appeal for the traffic engineer and others who wish to evaluate the effects of changes in geometric design, signing, or increased enforcement. It has obvious values in research requiring an evaluation of speeds before and after modification of a single variable. The method requires a minimum capital investment in equipment, and large amounts of data may be collected at a low per-unit cost as compared with other methods.

Subject to Pitfalls

While the values of fixed-point speed-measuring methods are obvious, they are also subject to many and subtle pitfalls. Vehicle speeds occur within a space-time continuum bounded by an almost infinite number of dimensions, many of which directly affect speeds observed at a given point within the continuum. The problem of obtaining samples of vehicle speeds at a fixed point, which will adequately reflect the nature of the real world being studied, is complex. The more precise the measurement being attempted (as in the case of attempting to determine slight but real changes in speeds brought on by enforcement activity) the greater the sampling problem.

A detailed inquiry into the development of sampling methods in speed measurements is necessary before experimental study of speed behavior can be undertaken on any large scale. The nature of the real world and the theoretical considerations underlying sampling design suggest that existing sampling techniques for fixed-point speed measuring are inadequate for refined experimental work. Before activity leading to a real understanding of speed behavior can be undertaken, therefore, it is necessary to develop satisfactory sampling techniques.

This article is a condensation of an interim report on a research project conducted by the Traffic Institute's Research and Development Division in cooperation with the Wisconsin State Patrol under a grant provided by the U.S. Bureau of Public Roads. It deals specifically with the development of sampling methods for studying vehicle speeds, using fixed-point methods of measurement. Because it is an interim report, the conclusions presented are necessarily tentative and subject to modification as more data become available.

The decision to publish an interim report was prompted by the amount of work currently being directed toward speed measurements. It was felt that even the initial data and conclusions would be valuable to researchers now engaged in planning experimental work in this area.

On October 1, 1958, the Wisconsin State Patrol placed several sections of rural state and federal highways under concentrated enforcement patrol. Prior to this time these highways had received only a minimum of enforcement attention mostly from county police forces. The level of enforcement designated for this highway network was uniform: one enforcement unit for each 15 miles of highway during two shifts (18 hours each day). Enforcement levels on this highway network have been held constant from October 1, 1958, to the present.

Samples Taken

Prior to the placement of additional patrol units on these highways, plans were drawn up for the study of long-range behavioral changes in the traffic stream after increased enforcement was applied. Of primary interest were evaluations of the type and degree of changes in speed behavior.

In September, 1958, one month prior to the assignment of enforcement units to the test network, a series of samples was taken at five separate points on the network of test highways. Several samples were taken at each location for different combinations of hours within days, and different days of the week. No sample

period was less than four hours duration and no sample contained less than 200 vehicles. All samples were taken in clear weather with dry road surface, using methods described in the section of this report entitled "Data Collection and Processing."

Sampling Problems

From the outset it was apparent that the sampling problems involved were exceptionally complex. When evaluation of the data collected at the five testing locations was completed in October, it was concluded that before it would be possible to isolate and measure changes brought about by an artificially induced variable (such as increased enforcement), more refined sampling methods would be required.

Initial evaluation of the samples gathered during September revealed statistically significant differences between samples taken at the same location under identical weather conditions but on different days of the week, or at different hours during the day. No systematic factors could be related to these variations, other than the time at which the samples were taken. Not only did the samples tested show statistically significant differences in regard to mean, variance, and proportion over the speed limit, but the absolute value of the differences was sufficiently large to make the assignment of all but extremely large changes produced by the controlled variable impossible.

As a result of this initial experience it was decided to undertake a study of vehicle speeds over an extended period under conditions as nearly normal as possible. The purpose of this study was to develop a theoretical model specifying required sampling design, and then to test it against the real world by empirical methods. The development of the theoretical model and testing by empirical methods have proceeded concurrently, with modifications of both being made as the information available at a given point in time dictated.

For this study, a highway location was necessary which met certain minimal requirements:

1. Marginal development, both at the measuring point and for at least two miles in either direction, should be at a minimum.
2. Enforcement activity both present and past must have been at a minimum.
3. Traffic volumes should be sufficiently high to assure an adequate number of observations and range of volume levels, but not high enough to produce congestion.
4. Speed limits should be the maximum permitted for rural highways throughout the state.
5. Highway design should be such as to minimize its effect upon speed behavior.

In November, 1958, a site was selected on U.S. Highway 14, between Darien and Walworth, which approximated the desired specifications. The highway at this juncture consists of two 11-foot driving lanes with 4-foot gravel packed shoulders. The surface is travel-worn asphalt in good condition. Road alignment approaching the sampling site is straight for 1.1 miles to the north and eight miles to the south. The grade within one mile in either direction is negligible. The marginal development consists of scattered farms and the legal speed limit is 65 mph in the daytime and 55 mph at night. The nearest zones requiring reduced speed are four miles to the north and six miles to the south.

Sampling for 16 hours

Sampling was begun at this location during the first week of November. A continuous sample of vehicle speeds was taken for 16 hours each day, from 7:00 a.m. to 11:00 p.m. Monday through Friday. This procedure was repeated for each subsequent month, with the exception of February when weather conditions throughout the month made sampling impossible. This report will deal with data collected up to and including the month of May, 1959. Present plans call for continuing this procedure each month through November, 1959, at which time a full year of representative samples will be available for evaluation.

Data Collection and Processing

All measurements of vehicle speeds are made with an "Electromatic Radar Speed Meter," which consists of a sensing unit, a standard indicating meter calibrated in miles per hour, and a 12-volt power source. The sensing unit is located adjacent to the highway in a specially constructed mailbox with a 12-volt battery concealed in the base as the power supply. The observer recording the data is housed in a station wagon placed well back in a farmyard concealed from the view of drivers passing along the highway. The indicating meter is connected to the sensing unit by means of a 500-foot cord. The entire unit is calibrated by a standard calibrating tuning fork before each day's sampling, again after eight hours of operation, and at the completion of each day's sampling.

Speeds are read from the indicating meter by an observer and recorded in five-mile-per-hour intervals on a specially prepared recording sheet. Samples are recorded by direction of travel and by hour to facilitate study of specific periods of the day. Vehicles are divided into three classes — passenger cars, light trucks, and heavy trucks. Unusual traffic units, such as vehicles pulling house trailers, road machinery, etc., are not included in the general sample but are noted separately.

Periodic samples of the actual speeds of individual vehicles are taken at irregular intervals, usually covering all vehicles that pass in any given two-hour period. These samples are used primarily for the purpose of analyzing the distribution of speeds for tests of skewness and kurtosis. Periodic tests are carried out for the purpose of detecting sample bias by driving a vehicle with a calibrated speedometer through the sensing unit at a known speed. Normally six northbound and six southbound tests are conducted. No bias has been detected in either direction.

The observers are off-duty highway patrolmen with extensive experience in the use of radar for enforcement purposes. Each observer spends a minimum of two hours with the field supervisor standardizing his reading techniques before actually making observations on his own. The reading accuracy of each observer is checked at periodic intervals by having the field supervisor take a series of readings from the meter while seated directly behind the observer. Reading error has been determined to be within (plus or minus) one mile per hour.

The speeds of all vehicles are measured, regardless of whether or not they are in free flow. This procedure was adopted since we are interested in studying the effects of volume on vehicle speeds, as well as other factors. To avoid repetition throughout the report it should be noted that unless otherwise indicated, all comparisons are standardized as to weather and road conditions. All samples used in the report were gathered during fair weather with the road surface dry.

Methods of Interpretation

If we wish to answer questions such as "Have driver speeds changed as the result of increased enforcement activity?" it is necessary first to determine the extent to which speeds will vary under normal conditions from one time period to another. It is reasonable to assume that driver speeds change minute by minute, from location to location, and from driver to driver, even under apparently similar conditions. In addition, we know that no two sets of measuring instruments and observers produce identical results. Even the most carefully conducted examination of driver speeds will reveal some change from one time to the next, even under the best of circumstances.

If such changes are completely random in the sense that some changes increase while other changes decrease speed, we would have little difficulty since with large enough samples taken over a long enough period of time these random differences would balance each other. The problem faced here is that of determining whether the differences in speed behavior between any two arbi-

(Continued on page 27)

Changing road alignment and exit design (right) made bridge approach safer.

ENGINEERING FOR SAFETY

Solution to bridge approach problem cuts accidents and wins ACSC's national award

BY CHANGING the alignment of the roadway and the design of an exit, accidents were eliminated and traffic friction eased on a heavily-travelled, three-lane approach to a two-lane bridge on U. S. Route 1 in Rahway, New Jersey.

Ralph L. Fisher, Assistant Supervising Engineer, New Jersey State Highway Department, has won top recognition in the 1958 national traffic engineering competition sponsored by the Association of Casualty and Surety Companies for his recommendation improving the physical layout of the approaches to the Rahway River bridge. A framed certificate and a cash prize of $100 were presented to Mr. Fisher for submitting the best example among those published last year in the "Getting Results Through Traffic Engineering" program.

The combination of a three-lane approach to a two-lane bridge and an exit ramp to Hazlewood Avenue in Rahway had created a frictional problem of guiding through traffic into a proper path at the exit, which resulted in a number of serious accidents. In a three-year period, there were eight reported accidents at this location, involving two fatalities and five injuries.

U. S. Route 1, which has an average daily traffic volume of 35,000 vehicles, provides for three lanes of traffic in each direction on the approaches to the Rahway River bridge. Owing to the fact that an exit ramp from this limited-access divided highway is located just south of the bridge, only two lanes are provided for through northbound traffic using the viaduct across the Rahway River. The pavement of the right hand lane of the three approach lanes of the main roadway more or less lined up with the exit ramp pavement, so that through traffic tended to head into the ramp.

Analysis of the accident records indicated that in many instances a last minute effort by through traffic to cut back to the

main roadway at the exit resulted in vehicles running into the concrete balustrade of the bridge or being involved in an accident with another vehicle.

In an effort to reduce traffic friction at this location, special lane lining and warning signs were installed and a flashing light was erected on the side island near the beginning of the concrete bridge balustrade with no appreciable effect on the accident experience. Accidents continued and maintenance of these signs

ramp and permitted the ramp exit to be re-designed so that it was necessary to actually turn to the right out of the through movement of traffic to enter to the ramp.

Special signs reading "Two Lanes Only 500 Ft. Ahead" were posted both on the right and center medial strip in advance of the location. In the three year period following the completion of the improvement, no accidents have been reported at the location.

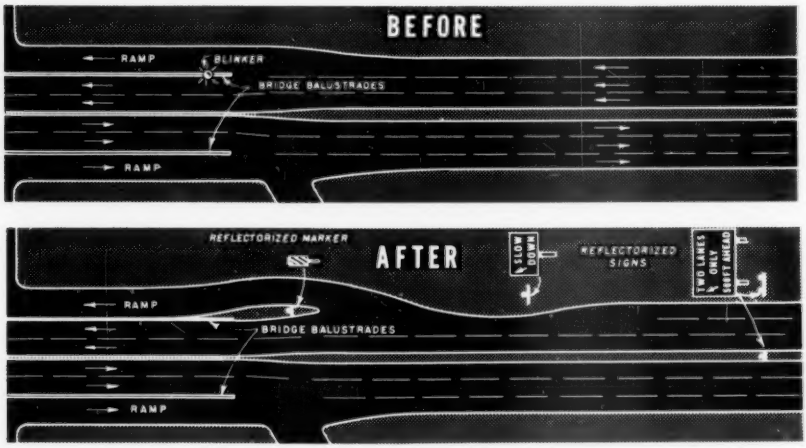


Diagram shows problem (before) and Mr. Fisher's solution (after).

and flashers became a problem due to frequent knock down.

On Mr. Fisher's recommendation, about 650 feet in advance of the parapet, the curb line of the main roadway was realigned to gradually narrow down to the northbound main roadway from a width of 34 feet to 27 feet. By thus changing the alignment of the roadway, the following was accomplished and eliminated most of the traffic friction at this location:

1. It provided a gradual transition from the three-lane to the two-lane section.
2. It made the drawdown width more readily apparent to the motorist.
3. It guided through traffic into the proper lanes for passing the exit

Judges of the 1958 competition were representatives of leading organizations interested in traffic safety: M. L. Shadburn, American Association of State Highway Officials; Ray Ashworth, International Association of Chiefs of Police; Thomas J. Seburn, Yale Bureau of Highway Traffic; Murray D. Segal, National Safety Council, and William J. Miller, Jr., Institute of Traffic Engineers.

The program, which was begun in 1938, is open to all traffic engineers, highway officials and others interested in improving traffic safety. Entries may be sent at any time during the year to the Insurance Institute for Highway Safety, Room 1101, 60 John Street, New York 38, New York. ★

MUST POLICE SUBMIT TO LIE TESTS?

Officers' refusal to take polygraph examination held ground for dismissal in California

BY LEO E. SMITH
Assistant Counsel
The Traffic Institute

CAN A CHIEF of police legally discharge a subordinate who refuses to submit to a lie detector test when suspected of a crime?

The District Court of Appeal (First Appellate District) of California has given a qualified approval to this procedure in *Frazee v. Civil Service Board of the City of Oakland*, et al, 163 A.C.A. 363, 338 P.2d 943 (1959). In this case, Frazee, the police officer, was accused by a citizen of having committed a felony. In connection with the investigation of the complaint, his chief ordered him to submit to a "lie detector" test. Upon refusal to comply with the chief's order Frazee was dismissed from the force. The Civil Service Board affirmed the dismissal and Frazee took his case to the courts.

It was Frazee's contention that "lie detector" evidence being generally inadmissible as evidence in court it was arbitrary and unreasonable for the chief to require him to take the test. He also maintained it was improper to compel a police officer to participate in the investigation of a charge in which the officer himself was implicated.

The District Court of Appeal, while recognizing that "lie detector tests do not as yet have enough reliability to justify the admission of expert testimony based on their results," stated: "However, it does not follow that such tests are completely without value. It is well recognized that polygraph tests are commonly used by law enforcement agencies in the investigation and detection of crime and that they have some value in such investigation. . . . Such tests can serve 'to guide police investigators in their hypotheses.' (3 Wigmore on Evidence (3rd Ed.) sec. 999, p. 646.)"

As to the propriety of a chief asking a subordinate to submit to a lie detector test, the District Court of Appeal said:

> "In considering the factual situation presented in the case at bar we must bear in mind the all-important concept of the peculiar and delicate position police officers hold in society. In treating of that concept Mr. Justice Spence, speaking for this court in Christal v. Police Commission, 33 Cal. App. 2d 564, 567-568, said:
>
> "'. . . Such officers are the guardians of the peace and security of the community, and the efficiency of our whole system, designed for the purpose of maintaining law and order, depends upon the extent to which such officers perform their duties and are faithful to the trust reposed in them. Among the duties of police officers are those

of preventing the commission of crime, of assisting in its detection, and of disclosing all information known to them which may lead to the apprehension and punishment of those who have transgressed our laws. When police officers acquire knowledge of facts which will tend to incriminate any person, it is their duty to disclose such facts to their superiors and to testify freely concerning such facts when called upon to do so before any duly constituted court or grand jury. It is for the performance of these duties that police officers are commissioned and paid by the community, and it is a violation of said duties for any police officer to refuse to disclose pertinent facts within his knowledge even though such disclosure may show, or tend to show, that he himself has engaged in criminal activities.'

"Circumstances can, of course, be conceived of wherein a superior's order that a subordinate officer submit to a polygraph test would be unreasonable, or wherein the subordinate might have some legitimate reason for refusing to submit to the test. However, there is nothing that appears on the face of the record in the case before us that suggests that the Chief acted arbitrarily, capriciously or unreasonably in requiring the test, nor that suggests any valid excuse for petitioner, as a sworn officer of the law, to refuse to submit to the test."

There is one additional case on this subject, *McCain v. Sheridan*, 160 Cal. App.2d 174, 177, 324 P.2d 923 (1958). In this latter case McCain was one of several officers who petitioned to take lie detector tests to clear themselves of suspicion of having taken certain missing bail bond money entrusted to their care. A series of tests was planned and midway through the tests McCain refused to continue. At the point at which he refused McCain had been caught in an apparent effort to deceive the person administering the test. The District Court of Appeal upheld McCain's dismissal from the force on the ground that he had volunteered to take the test and that it was within the Chief's authority to direct him to continue with the tests once they were voluntarily undertaken. Comment from the opinion of the District Court of Appeal follows:

"By his written request that the test be administered to him, appellant evinced desire to obtain whatever benefit such apparent willingness might yield in diverting the investigation to others. The order that he complete the test he had himself requested seems in no way an unreasonable departmental regulation. *Such tests are recognized as having some value in investigation, even though they are not yet sufficiently reliable to be admitted in evidence. People v. Aragon*, supra 154 Cal.App.2d 646, 658, 316 P.2d 370; 39 Cal.L.R. 439. We do not suggest that appellant's refusal to obey the order is any evidence of guilt or of knowledge of the identity of the guilty party. We do hold that, in the light of his sworn duty to aid in the investigation of crime, the order that he complete the test he had requested was reasonable. Appellant's refusal to obey that order impeded the investigation of a criminal offense and amounted to insubordination and unofficerlike conduct, thus warranting his discharge." (Emphasis supplied.)

Thus two cases—both from a District Court of Appeal in California—hold that a chief of police, under appropriate circumstances, may direct a subordinate to take a polygraph or "lie detector" test and that a refusal to comply will constitute insubordination and a reason for dismissal from the force.

Note: Those interested in the legal principles applicable to the use of the lie detector in criminal cases will find this subject covered in "Lie Detector and Truth Serum Evidence," *Know The Law*, pp. 184-187, and "Physiological or Psychological Truth and Deception Tests," 23 ALR2d 1306. Generally the courts have held such evidence inadmissible either for or against the defendant in a criminal case. Exceptions to this rule are pointed out in the above articles. ★

Survey cars check sight distance at a curve in a Wisconsin highway. Cars are well-marked to warn approaching motorists.

HIGHWAY INVENTORY

Wisconsin is conducting a five-year 'critical feature' survey of its roads in order to plan for the future

THE RAPID upward surge in motor vehicles registered and miles traveled on Wisconsin highways gives some indication of the need for keeping state highways in shape to carry increasingly heavy volumes of traffic expeditiously and safely.

Constant pressure of rapidly expanding traffic makes it necessary to plan and build for the future as well as for the present.

To help determine Wisconsin highway needs, a five-year "critical features survey" is being conducted by the Inventory and Road Life Unit of the State Highway Commission's Planning and Research Division.

The survey was described in the *Wisconsin Traffic Safety Reporter*, published by the Safety Division of the State Motor Vehicle Department.

A three-man team has been at work for about a year and plans to cover the remaining miles of the entire state trunk highway system in another four years — checking sight distance limitations resulting from vertical and horizontal curvature, and other critical features.

With help from the University of Wisconsin, the survey unit has developed its own measuring instruments. An "inclinometer" measures per cent of rise and fall in the highway; a "superometer" measures road tilt at curves.

Two vehicles with synchronized odometers are used to determine sight distances. The lead vehicle carries a target light, the position of which can be observed and recorded.

Data obtained will enable researchers to determine, among other things, how many safe-passing distances there are per mile of highway, based on volume and speed of traffic.

Primarily, the study will be used, with other criteria, in setting up priorities for reconstruction of existing highways to handle present and anticipated traffic loads efficiently.

Meanwhile, the marking of no-passing zones and the establishment of reduced speed zones at critical locations are vital related functions being carried on by the Traffic Services Section.

At some locations sight distances can be improved by the removal of vision-obstructing trees, branches, embankments, signs, crops and brush—a practice known as "daylighting." ★

PARKING and the URBAN ECONOMY

CONCLUSION:
CENTRAL BUSINESS AREAS

BY GEORGE W. BARTON
Director of Traffic Engineering
The Traffic Institute

WHEN THE WORD "parking" is mentioned, most people probably think of parking at the central business district. And further, the parking problem is commonly thought to be one related primarily to shopping. In reality, the character of the downtown area of the average-to-large city is undergoing a change which has an important bearing on the parking situation. In the past an important activity—often the primary activity—of the downtown area was retail sales. As cities and metropolitan areas are growing, an increasing proportion of the retail sales activity is found in community and regional shopping centers. This is not to say that the importance of the retail function of the downtown area is diminishing; rather, it may mean that the downtown area is doing a decreasing proportion of the total retail business of the area.

So what is happening to the character of the downtown area? While continuing to be the retail center offering the widest selection of goods and perhaps the best opportunity for major sales

In his second and concluding article on this subject the author discusses the changing 'downtown' area and its bearing on parking

purposes, the downtown section has gained greater importance in other ways. It is the center of government for a growing community. It is the headquarters for commerce, business and the professions. And it is a cultural center. As this area becomes the locus for government, business and professional activity, it becomes a place where an increasing number of persons are employed. This is significant not only for the planning of parking, but also to the retail merchant. This growing number of downtown employees forms a ready market for the retail merchant.

Parking for Employees?

As the role of the downtown area changes, the parking problem likewise changes. In years past, plans for parking development were aimed primarily toward the customer. Parking for the businessman and his employees too often was neglected or ignored. The location, cost, convenience, and design of new parking facilities were conceived with the shopper in mind. If anything was done for the employees it was often far away, unattractive and inconvenient. Alert downtown property owners now recognize that the inadequacy of the parking available for businessmen and their employees may be one important factor contributing to the shifting of certain types of offices and business establishments to suburban locations where adequate and convenient parking tends to be readily available.

While it is still important to provide convenient parking facilities for shoppers and customers, a well-conceived parking program today must also consider the businessman and his employees if the central business district is to prosper. In a number of cities it is still possible to park at the curb in the downtown area. One sometimes wonders whether traffic engineers have not been a little bit too eager to prohibit curb parking in downtown districts in their efforts to relieve traffic congestion. If the traffic moving on the downtown streets is generated primarily by the downtown area, the elimination of curb parking may be inevitable. On the other hand, if the traffic is moving through the downtown area without contributing to downtown business, it may be wiser to find some other solution than abolishing curb parking.

As long as street parking can be retained, its use should be carefully supervised. Curb parking is the most convenient and therefore the most valuable to be found downtown. Its use should be shared by the maximum number of citizens and not monopolized by the few. Traffic studies in many cities have shown that a high proportion of the trips made to the downtown area are of short duration. These are trips made to visit the bank, pick up an item ordered by telephone, pay a bill, sign a contract, or similar important but brief missions. Persons engaged in such brief errands should be able to use the most convenient parking facilities, otherwise they are most likely to seek other locations for their transactions.

Reducing Time Limits

In recognition of this situation, a high proportion of cities are progressively reducing the time limits for curb parking or are increasing the parking meter rates or both, in order to stimulate turnover. The 30-minute time limit is not uncommon in the heart of the business district. As time limits are lowered it becomes less practical for the businessman and his employees to monopolize the highly important curb parking space.

No longer is 5 cents for 60 minutes considered to be a magic parking-meter formula. The inequity of charging 5 cents to park for one hour in the most convenient possible space, as compared with 25 or 50 cents per hour in off-street facilities a block or more away,

is coming to be recognized. Frequently now meter rates are 5 cents for 30 minutes or even 5 cents for 15 minutes.

Increasing the meter rate seems logical especially where the funds thus produced are used for worthwhile parking or traffic improvements.

In appraising the offstreet parking situation, consideration must be given to true need. In past years, in almost any community, there was hardly any question as to need. The post-war expansion in automobile ownership and use found few downtown areas equipped with enough parking space to satisfy the growing demand. There is beginning to be an indication today, however, that the situation in some downtown areas is becoming stabilized. So, logically, a testing of need should precede plans for action.

Rule-of-Thumb Test

It is easy to make a rule-of-thumb test of the adequacy of the parking system serving a downtown area. Usually the peak of parking demand is reached at noon or shortly thereafter on a popular shopping day such as Friday. Of course, in some communities the demand on Saturday is equal or higher. If existing parking facilities are inspected at these times, valuable information on real need can be obtained. If many of the convenient facilities throughout the area are filled and turning away customers, there is an obvious general shortage. Or, if the facilities in one segment of the central area are fully used, a shortage may be indicated in that immediate vicinity. On the other hand, if vacant spaces are generally available even during important retail seasons (exclusive of the pre-Christmas period), there may be no parking deficiency *at the prevailing rates*. This is not to say that increased use would necessarily be stimulated if lower-cost parking facilities were available. Rather, it implies that further study is required to determine the relationship between real need and appropriate rates.

The experience in many cities has shown that extreme care is required in the planning of an offstreet parking system. The placement and design of parking facilities have a strong influence on the form and development of the central business district as a whole. In fact, it is essential that the planning of the parking facilities be integrated with planning for traffic circulation and planning for land use. Parking facilities indiscriminately located can interrupt the continuity of business frontage, impede the vital circulation of people between downtown activities, and needlessly draw automobiles through the heart of the business community. Therefore the organization of business functions, as well as the pattern and capacity for traffic circulation, must be considered in the design of a satisfactory parking system.

The emphasis of the need for *planning* in the location and design of parking facilities should not be interpreted as meaning that parking facilities should necessarily be planned, designed and built by the municipal government. At the outset it is an appropriate responsibility of the government to do the planning and to guide the development. Within the planned framework for the central area, private-enterprise parking is still possible and desirable. In some instances, however, cooperative action between private enterprise and government may be indicated if parking of the desired form and in the desired locations is to be achieved.

Freeways Focus Problem

Currently, under the impetus of the National Interstate Highway Program, many cities are acquiring freeways leading to, or adjacent to, their downtown areas. As these freeways radically increase the capacity for traffic movement to the downtown area, the problem of downtown parking is brought into sharper focus. Obviously no useful purpose is served by bringing more people downtown by automobile unless they have places to park. Further, if the automobiles from the freeway must travel over the existing surface streets to reach parking facilities at the downtown area, the ability of the freeways to serve the downtown section is limited

by the capacity of these surface streets. If downtown areas are to derive their full benefit from the increased accessibility created by freeways, the freeways themselves, their ramps, the surface streets, and the parking facilities must be designed as a single unified system. This calls for a sharpened skill on the part of the engineers and planners who are responsible for the development of the highway transportation system.

Zoning for Parking

Zoning is a valuable tool to use in solving the future parking problem in many sections of the city other than the residential areas as discussed previously. Zoning ordinances often require that any new land development—residential, business, industrial or institutional—must include a suitable number of parking spaces as a part of the improvement. Normally there is a ratio specified in the ordinance which is based on the relationship between (a) the number of parking spaces required, and (b) the number of hospital beds, or theater seats, or employees (in the case of an industrial plant), or floor area (in the case of business establishments). The effectiveness of these ratios varies from city to city. Generally, however, the number of spaces required by the ordinance is a minimum, rather than a maximum, in order to make the ordinance enforceable. Progressive developers and businessmen quite often supply more parking space than is required by ordinance.

The concentrated central business district is usually exempted from the parking space requirement of these ordinances, at least in the larger cities. It is logical that this exception be made. If each new business establishment were required to provide its own parking facilities in the downtown area, there would be various unfavorable effects on the district. Many businessmen would be unable to find land at an acceptable price to build both a new store (or office building) *and* a parking garage in the center of the business district where they would need to be to conduct their business satisfactorily. This would tend to force downtown establishments to seek locations elsewhere to the overall detriment of the community. Even if individual business establishments could find land near the center of the district, the dispersal of parking facilities throughout the central area would draw more traffic through the heart of the district, interfere with pedestrian circulation, and interrupt the continuity of business activity. For such reasons as these, students of downtown area problems agree that at least the majority of downtown parking facilities must be planned for community use and must be located where they will harmonize with total downtown planning. ★

NSC Prepares for 47th Safety Congress

The National Safety Council has announced final plans are being completed for the greatest safety show on earth — the organization's 47th National Safety Congress.

The giant safety meeting — to be held in Chicago October 19-23 — will be attended by some 12,500 safety specialists from around the world.

Theme of this year's congress will be "Safety in the Sixties" — a look ahead at what the safety movement can expect in the next 10 years.

"The convention," the council pointed out, "will not limit itself strictly to tomorrow's world. It is still vitally important that we continue to look at accidents that are happening right now and find ways to stop them."

The council continued, "Every day newspapers are filled with the headlines: 'Family drowns on outing' and 'Seven killed in head-on crash.' In looking ahead, we can't overlook the present."

Sessions at the convention will run the safety gamut from barnyard to outer space. "And every field of activity in between," the council added.

More than 900 speakers and program participants will conduct the sessions studying all phases of accident prevention.

KNOW THE LAW

ENFORCEMENT ON SHOPPING CENTER ROADS

BY ROBERT L. DONIGAN, General Counsel
and EDWARD C. FISHER, Associate Counsel
The Traffic Institute

OUR POPULATION has increased from 132 million in 1940 to an estimated 174 million in 1958.[1] By far the greater portion of this phenomenal population growth has spilled over into suburbia, bringing new housing developments and resettlement in rural areas. Every city of any size has a variety of outlying shopping centers, attracting not only the suburbanites but city dwellers as well, with ample parking space and convenient, easy-to-reach facilities.

According to an estimate made in the May 1959 issue of *Chain Store Age*, "3700 centers of various sizes and shapes . . . will be in operation in the United States by year end (1959)." Delving into the future the same report states: "Assuming no major wars or economic upheavals we should have 8500 to 10,000 centers by 1965 with the rate of center development accelerating after 1962."

The transportation problem is a factor contributing to the growth of shopping centers. One authority explains:

> "At least two important elements of the transportation problem coupled with this growth (in population) produced the modern one-stop shopping center.
>
> "Element one is movement. Americans are modern nomads: a people on wheels possessing the greatest mobility known to society. They are capable of going almost anywhere by pressing an accelerator. For such a population, the regional shopping center capitalizes on the mobility trend and seeks to supply all the needs in one place and at one stop.
>
> "Element two is rest. The car in motion is one thing; the car at rest is just as serious or more so. One of the greatest assets of the regional type center has been its capitalizing on freedom from congestion, convenient ease of automobile and pedestrian circulation, and foremost, off-street parking facilities.
>
> "The regional shopping center joins the forces of mobility and an ever-expanding population to create retail centers equivalent to the entire downtown areas of many large American cities." [2]

It is the purpose of this article, however, not to explain the virtues of shopping centers, or to trace their history and development, but rather to cover the legal problems of traffic law enforcement, which arise incidental to their use. Frequent inquiries relating to this subject, both in Traffic Institute classes and through correspondence, indicate the timeliness of a discussion of this kind. Legal precedent being practically nonexistent, this treatment necessarily must be exploratory in nature, seeking answers to these questions through established legal principles applicable in similar situations.

As one writer dramatizes the problem: "What if there's a wreck on the street in one of the centers? Or, some-

1. Bureau of the Census figures reported in the World Almanac, 1959, *New York World Telegram*.
2. "Shopping Center Traffic Problems," *Traffic Quarterly*, April 1955, Wilton Becket, pp. 162-172; for additional comment see also "Suburban Shopping Center Effects on Highways and Parking," *Traffic Quarterly*, April 1956, Hoyt, pp. 181-189.

thing worse, suppose a drunk driver ran over and killed a small child? Or suppose a group of hot-rodders decided to hold a drag race on a shopping center? Could police make an arrest?" [3]

If drivers are subject to traffic laws when they use their automobiles on shopping center roadways, then a standard for enforcement is available. However, it is open to question whether traffic laws can be enforced on shopping center property. Shopping centers are privately owned and operated. The roadways servicing them are on private property. Therefore unless traffic regulations apply on private roadways, how can they apply on shopping center lanes and highways? By statutory enactment, traffic laws quite generally apply *only on public highways*. The more serious offenses such as reckless driving, driving while under the influence of intoxicating liquor or narcotic drugs, leaving the scene of an accident, and negligent homicide are an exception to this rule. In several states some or all of these very serious offenses are limited to commission on a public highway. Driving while under the influence may be taken as an example. While in most states this is an offense wherever committed, the statutes of several states limit this offense to highways.[4]

Uniform Code Cited

To illustrate the point, the Uniform Vehicle Code (1956), sec. 11-101, states:

"The provisions of this chapter (Rules of the Road) relating to the operation of vehicles refer exclusively to the operation of vehicles upon highways except:

1. Where a different place is specifically referred to in a given section.
2. The provisions of article IX and chapter 10 shall apply upon highways and elsewhere throughout the state."

Article IX referred to above contains provisions relative to reckless driving, reckless homicide, and driving while under the influence of alcohol or drugs. Chapter 10 also mentioned therein relates to duties following accidents. These offenses may be committed anywhere within the state; there is no restriction to highways only. But except for these four serious offenses, the Uniform Vehicle Code limits the application of the ordinary rules of the road, — turning, speeding, right of way, etc. — to highways.

"Public Road or Highway" Defined

When offenses can only be committed on a "public highway," what constitutes "public highway" or "public road" takes on vital significance in law enforcement. In effect the commission of the act on a "public road or highway" is an element of the offense like any of the other acts which go together to constitute the crime and must be proven in a similar manner. The same act or omission committed elsewhere would not constitute an offense.

Among the definitions given for "public" in Black's Law Dictionary are "Open to all; Common to all or many; General; Open to common use."

"Highway" in the same work is said to be "an easement acquired by the public to the use of a road or way for thoroughfare; a free and public road, way or street; one which every person has the right to use. . . The generic name for all kinds of public ways."

As said in *Stavola v. Palmer*, 136 Conn. 670, 73 A.2d 831 (1950);

"Webster's New International Dictionary (2d Ed.) defines a highway as 'A main road or thoroughfare; hence, a road or way open to the use of the public.' We said in *Laufer v. Bridgeport Traction Co.*, 68 Conn. 475, 488, 37 A. 379, 381, 37 L.R.A. 533: 'A highway is a public way open and free to any one who has occasion to pass along it on foot, or with any kind of vehicle. In every highway the King and his subjects may pass and repass at pleasure.' The essential feature of a

(Continued on page 35)

3. "Shopping Center Traffic Off Base for Police?—Better Not Try Test," Memphis, Tennessee, *Press-Scimitar*, Duerksen, May 29, 1959.
4. A compilation as of August 1959, based on the latest available editions of motor vehicle codes, shows the following states in this latter category. Cal., Ia., Ky., Nev., N.C., N.D., Ore., S.D., Tenn., Tex., Wash., W. Va. Apparently also Ala., Alaska.

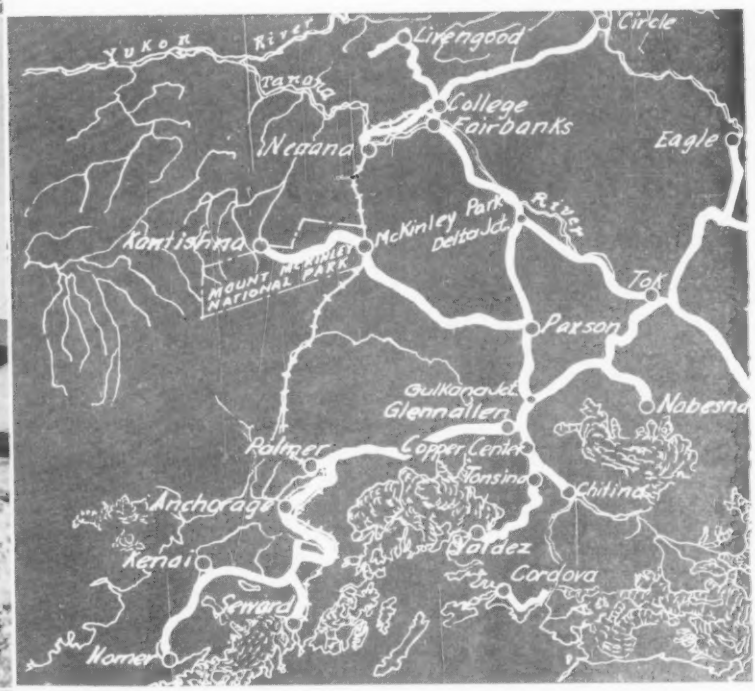
ALASKA'S HIGHWAY TRAFFIC

The 49th state is matching its expanding road network with effective traffic legislation and modern enforcement techniques

BY A. P. BRANDT, Superintendent, Alaska State Police

NOT SINCE the Gold Rush days of 1898 has there been such great interest in Alaska as is shown today. Many of the misconceptions about Alaska's climate and living conditions are being dispelled by the thousands of tourists who, each year, travel to Alaska via the Alcan Highway. It is not inconsistent therefor that some interest should be shown among the professional readers of this journal of the traffic and highway problems encountered in the 49th State.

Contrary to popular belief, the dog team and sled are not the most common modes of transportation for Alaskans. These have long since been replaced by the aircraft and the automobile. Alaskans have the highest per capita private aircraft ownership in the world, and more aircraft traffic occurs at the Anchorage International Airport in one day than at LaGuardia or Idlewild Airports in New York City. Similarly, the automobile is as essential to the transportation and economy of Alaska as anywhere else in the United States, and the dog team, except in the very remote areas of the state, has been relegated to the role of a sporting activity which engages the



The Alaska State Patrol (formerly Territorial Police) enforces laws on 4,271 miles of highway. The state's principal roads are shown in map above, which has been taken out of large state map at left and replaced by photo of police post building.

enthusiastic attention of hundreds of Alaskan dog-lovers and racing enthusiasts.

Embracing an area of 586,000 square miles, the State of Alaska extends from the Arctic Ocean to the Pacific; from well above the Arctic Circle, only a few miles from Soviet Russian territory, to within a few hundred miles of the State of Washington. Climate ranges from the comparatively moderate temperatures and heavy snowfalls of the Pacific mountain region to the 70 degrees below zero temperatures and light snowfalls of the Arctic Slope region. The construction and maintenance of roads, bridges and related works within this vast area presents tremendous engineering problems.

No Funds in Early Days

The new state's highway development program was initiated in 1905, when the Alaska Road Commission was created by Act of Congress as an agency of the War Department. The Congress appropriated no funds for road construction; but rather, provided in the act that 70 per cent of all monies collected for liquor licenses outside of incorporated towns in the then "district of Alaska" should be devoted to the construction and maintenance of wagon roads, bridges, and trails in Alaska.

The first annual report of the Alaska Road Commission might well have been written today. It recognized the difficulties of road construction in permafrost and under arctic conditions, as follows:

> "A serious detriment to the making of a road in Alaska is the thawing of the ground beneath the moss. It has been the universal experience that whenever the moss is cut into, thawing immediately commences, and the trail which was passable becomes a filthy, slimy mass of mud, roots, and broken stone, a difficult route for men on foot, a slow and tiresome road for loaded animals, and an impassable obstacle to any sort of vehicles."

The report chronicled the drowning of a horse "on the road," and recommended a one million dollar appropriation for road and trail construction—a fantastic sum half a century ago—with which to plan and begin construction of a 300 mile road and 1,200 mile trail network. Prior to this there were fewer than a dozen miles of passable wagon road, constructed by public subscription, in the entire state. In 1932 the Alaska Road Commission was transferred to the Department of the Interior.

Although most of the roads and trails constructed during the War Department's 27 year administration were designed to serve the largely itinerant population engaged in mining and fishing, the Richardson Highway, extending from the all weather ice-free port of Valdez to Fairbanks was constructed, first as a trail, later as a wagon road, and finally improved to accommodate the first motor vehicle to make an appearance on the Alaska scene—the Model T Ford.

Road building accurately reflected the lack of interest in the development of the Federal Territory until the beginning of the Second World War. In 1941, appropriations were increased to accommodate military needs during and immediately following World War II. Plans for developing the disjointed road system into a modern connected highway network—plans for which had been gathering dust for almost 35 disappointing years—were revised in the light of military necessity when foreign troops occupied American soil on the Aleutian chain.

Overland Route Needed

In addition to interconnecting Alaska's principal military installations and cities with one another and with the all-weather, ice-free ports of Haines, Valdez, and Seward, the military situation required an overland route safe from enemy naval action to connect Alaska with the continental United States. Under the direction of the U.S. Corps of Engineers construction of the great Alcan Highway began southward from Whitehorse in April 1942; from Dawson Creek northward in May, and from its junction with the Richardson Highway at Big

Delta southward in June. Less than eight months later, in November 1942, weary soldiers, professional construction men, and American and Canadian military and civil authorities witnessed the cutting of a ribbon which placed the 1,428.9 mile "Big Trail" in service. The opening of the Alcan Highway marked the turning point in Alaska's struggle for an integrated highway system.

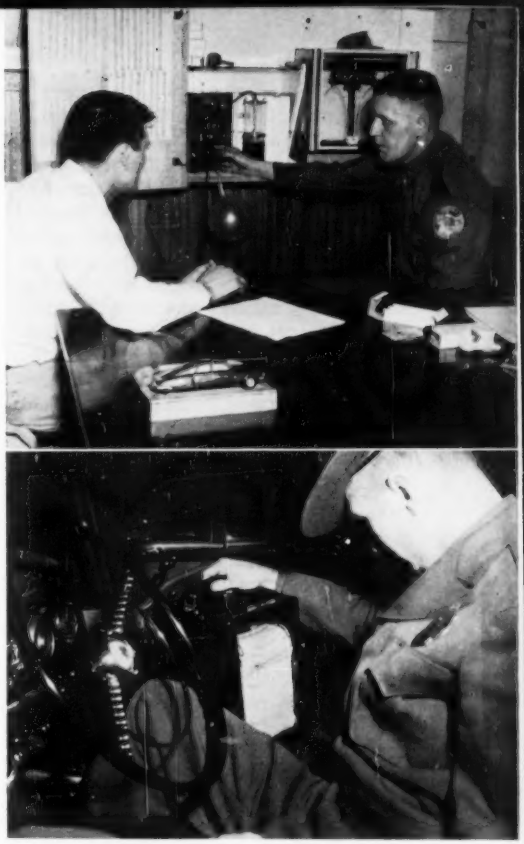
However, the military situation eased before the Territory's highway network could be developed, and it was not until 1948, when the world political situation had produced acute unrest in the nation, that Alaska overnight became an important bastion of defense of the continental United States. Increased military preparedness and the resultant construction of major military installations throughout Alaska placed heavy demands on the road system. The interconnection of the principal military bases with paved highways became essential and urgent. New highways were pushed through, connecting Anchorage, Alaska's largest city, and the adjacent military installations with Seward, Alaska's principal port.

New Era In Road Building

The present highway system consists of 4,271 miles of all-weather paved routes connecting the ice-free ports of Valdez, Seward, and Haines with interior Alaska's principal cities and military installations, and with the continental United States via the Alaska Highway through Canada. A secondary system connects farming, mining, and industrial areas to the primary network. In addition to the connected network, there are also 570 miles of isolated roads connecting inhabited areas with air, rail, or water transportation facilities.

It is the conviction of all Alaskans that the development of the state's tremendous mineral, timber, and petroleum potential is dependent almost entirely upon adequate overland transportation.

The signing of the Federal Aid Highway Act of 1956 ushered in a new era of road building in Alaska. For the first time, the new state became eligible to participate in the Federal Aid Highway



Chemical testing devices (top) and radar play important role in Alaska State Patrol's modern enforcement techniques. Driving under the influence is a serious problem, but it is being reduced through tougher laws requiring jail sentence, three year suspension.

Act and be assured of reasonably adequate funds over an extended period of years with which to effectively plan and economically prosecute the improvement and extension of Alaska's highway network.

Present road building plans provide for the construction of highways to Nome and the Bristol Bay Region for the inauguration of a Ferry System to connect the insular communities of Southeastern Alaska and the extension of the Haines Highway to the capitol city of Juneau.

Highway construction in Alaska is a prohibitively expensive operation because

of the great problem involved in preparing a permanent foundation and subgrade that is test against the permafrost and muskeg conditions which exist over a major portion of the state. The seasonal "spring break-up" makes major highways extremely susceptible to damage by heavily laden commercial hauling vehicles. During this period of the year, a 75 per cent reduction in authorized load limits is strictly enforced by means of the five permanent scale house installations operated by the State Police at Anchorage, Seward, Fairbanks, Valdez and Haines.

Traffic Enforcement

Alaska has its peak traffic rush hours, its slow moving weekend traffic, and multiple car rear end collisions. Traffic conditions are very similar to those that might be encountered in any other state.

Traffic accident prevention is carried on through the medium of enforcement and safety education. The motorist in Alaska would not be surprised to find rural highways posted "Speed checked by Radar" or the other modern aids to traffic enforcement in current use. Traffic patrol of the rural highways is carried on by officers of the State Police stationed in one of the 19 posts and detachments distributed throughout the state from Point Barrow to Ketchikan.

Because of the very extensive areas of highway that must be patrolled between widely separated communities, State Police officers frequently log 300 and more miles of highway patrol each day. Communications between the various police posts and the mobile patrol units is assured by means of modern FM radio equipment. Although all of the major highways are open throughout the year, winter conditions in certain areas may temporarily close a roadway or pass. In the vicinity of Thompson Pass on the Richardson Highway north of Valdez, snow avalanches are not uncommon and may close the highway for as much as a week at a time. The annual snowfall in this area is 417 inches. During the winter months highway patrols are accelerated to ensure the safety of stranded motorists who may experience difficulties with their automobiles. In recent years there have been no instances of stranded motorists succumbing to exposure in the sub-zero temperatures of the arctic winters.

The Alaska State Police, formerly the Department of Territorial Police, has been organized for a period of 19 years and was originally created for the exclusive purpose of highway traffic enforcement. At the present time, a major portion of the department's effort is devoted to accident prevention and traffic enforcement, but the officers of the State Police provide services of a very diversified nature in the absence of other local law enforcement officials. In addition to their general responsibilities for the enforcement of wildlife, criminal and traffic laws, personnel of the department also serve as local tax, welfare, and health representatives of the state government and participate in frequent search and rescue operations.

The examining and licensing of motor vehicle operators is a responsibility of the State Police. The departmental headquarters at Juneau maintains permanent driving history folders for the 114,000 licensed Alaska motor vehicle operators. These files into which are inserted abstracts of court records of conviction, traffic citations, and accident summaries, are used for driver improvement pur-

Wild animals are traffic hazard in Alaska, but caribou (shown here) are less of a problem than the "pedestrian moose".

poses in very much the same manner as in other jurisdictions. The procedures for the issuance of a license require the completion of written, driving and vision examinations. In the larger communities of Alaska these tests are administered by trained license examiners. In the smaller villages and towns, the resident State Police officer administers the tests. A special license is issued to school bus drivers.

Uniform Reporting

Alaska has had no standard accident reporting procedure until this current year. Accidents occurring in the rural areas were reported to the State Police, and those within municipalities or towns, to the local police department. To implement the provisions of the 1959 Financial Responsibility Act, a uniform accident reporting system was established whereby accidents occurring anywhere within the state are reported to the State Police Accident Prevention Bureau at Juneau.

Although records for the state as a whole are not available, the annual toll of accidents and fatalities during the past several years has shown a significant decline in the rural areas. During the five year period between 1954 and 1958, rural accidents declined by a total of 27 per cent and fatalities by 21 per cent.

Rural accident experience is not dissimilar to that found in such states as Minnesota and Montana which experience similar winter driving conditions. Rear-end accidents predominate in the areas of traffic congestion, and one-car accidents are most frequently encountered on the rural highways. Surprisingly, although the incidence of motor vehicle accidents is at its peak during the winter months when adverse driving conditions are most prevalent, it is during the summer that the greatest number of injuries and fatalities occur. This is due largely to the high snow banks which build up along both sides of the highway during the winter, and although accidents are more frequent, injuries are less likely to occur due to the cushioning effect of the snow in slowing the momentum of the vehicles.

A hazard unique to Alaskan motorists is our "pedestrian moose." This animal, the prize of Alaskan hunters, and a species of wildlife indigenous to all areas of the state is also an irrepressible "jaywalker." During the winter months when the snow is deepest, he shows a common instinct to use the highways in preference to the wooded areas and this frequently brings him into conflict with motorists. As many as 400 moose are killed each year in collisions with automobiles or the trains of the Alaska Railroad.

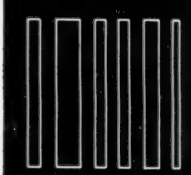
The deadliest menace on the streets of Alaska currently is the individual whose lack of conscience allows him to drive while intoxicated. Due to the large number of transient construction workers and military personnel in the state, and the relatively limited recreational opportunities during certain periods of the year, driving while intoxicated is considerably more prevalent than in many other areas of the country. Enforcement is carried on by means of chemical testing devices which are standard equipment in all State Police Detachment Offices, and municipal police agencies.

Penalties Increased

During 1958, our Alaska courts adopted the policy of requiring persons convicted of this offense to serve a mandatory jail sentence. This increased severity of judicial punishment and the effectiveness of the new state law requiring a mandatory three year suspension of driving privileges following a second conviction for drunken driving has been effective in reducing the incidence of this offense which is approximately four times more prevalent in Alaska than for the United States as a whole.

Alaska, although one of the youngest states in the Union, is not backward in its efforts to reduce the tragic toll of accidents on our highways. New legislation based upon the Uniform Motor Vehicle Code, effective driver's licensing and driver improvement procedures, and the use of modern enforcement techniques are paying dividends in increased highway safety for Alaskan motorists. ★

NOTES ON
BOOKS



THE LEARNING PROCESS FOR MANAGERS

By Nathaniel Cantor, Harper & Brothers, N. Y., 1958, 154 pp.

Reviewed by DAVID L. G. JACOBS
Research Division, The Traffic Institute

THE PROCESS of learning how to supervise people is painful—hence, it has been somewhat neglected. In this book Professor Cantor suggests that the objectives of the supervisor, the subordinate, and the entire organization can be more easily achieved if the manager can become more fully conscious of elements in his own behavior. Presumably, as he becomes more aware of his own motives, status symbols and threats to status will play a less significant role in the interaction between superior and subordinate. Managing people then becomes primarily a matter of assisting in their development. One cannot resist conjecturing about how few managers today have sufficient insight into their own needs, motives, behavior, permitting them to practice the managerial art effectively.

The book is divided into two parts: the first part is devoted to "The Functions of Managers;" the second, entitled "The Learning Process for Managers," includes chapters on "The Manager as a Leader," and "Characteristics of a Skilled Manager."

Professor Cantor believes that "one of the most effective ways to become a professional manager is to join in conference with a small group of other managers who want to learn and to explore their organizational responsibilities and duties."

This can best be achieved in a workshop setting in which analyses of role playing, case studies, and similar techniques can be used to the fullest extent. The author restates the classic proposition that motivation is the most important element of the developmental process, and goes on to hope that the reader, after careful study of this volume, will ". . . experience new insights into his own behavior as a person and as a manager."

The main theme of the book is that a manager deals with people, not things; thus, the development of subordinates is an important responsibility. The paramount task of the supervisor is to help the subordinate overcome his own weaknesses. The hoped-for result is an employee who knows his job, feels secure in his job, and realizes that management is genuinely concerned to obtain cooperative participation in the operations of the organization.

This is a well-written, readable and thought-provoking book. Its title should be on the reading list of every person who directs the activities of others. ★

Police Management Planning.

By John P. Kenney, Springfield, Ill., Charles C. Thomas, 1959, 149 pp.

Formal planning by police agencies is a relatively new practice. Guidelines for police managers are few and available literature with a police orientation is limited. Professor Kenney integrates theoretical management concepts and police management practices to provide police managers with some meaningful guides to bring about needed improvement in the police field.

FIXED POINT SPEED...

(Continued from page 8)

trarily selected time periods is:

1. Large enough to produce serious errors if we attempt to determine the effect of an introduced variable such as enforcement.
2. Systematic with regard to various convenient time intervals such as hours, days or months.

The answers to questions such as these may best be found through statistical reasoning. We are compelled to answer, for example, the question whether the hourly differences between mean speeds computed from our data vary randomly, or whether they show a significant consistency in their variation. The specific techniques used in carrying out such an inquiry are called "analyses of variance" and are too lengthy and complicated to discuss here. However we may briefly generalize concerning the technique used in order to give the reader some understanding of how the conclusions were reached.

Evaluating Small Sample

The data from which hourly average speeds are computed may be thought of as a sample of the speeds of all cars which travel that particular highway location day after day, month after month, year after year. Since the hourly sample represents only a very small number of the total observations that could be made, we would not expect that its average, for example, would be exactly the same as an average computed from all the vehicles that ever had or ever will pass that particular point.

Statistical theory, and indeed intuitive reasoning, tell us that even though the average of a sample such as this will not be identical with the average of a larger set of data from which it is drawn, it will not be far different and will grow closer to the true average as the sample size is increased. Another and perhaps more important consideration is that if repeated small samples are drawn from the traffic stream, the mean of some will be above the *true* mean. An equivalent number will be below, if the error in sampling is *truly random*. By random we mean equally likely to happen in any of the possible ways open. In using this definition we take some liberties with randomness as used in the usual mathematical sense, but for purposes of a simplified discussion the definition will suffice to convey the general principles involved.

Basis for Analysis

This latter concept is important since it forms the basis for analyzing our problem. Let us, for example, assume that we have one hundred hourly samples of vehicle speeds taken at the same location on a given highway. If the differences between these samples brought about by differences between drivers, instrument error and the like are random, then we would expect that the differences between all sample means and the true mean of speeds at that point on the highway to be close to zero. This is just another way of saying that if the differences are equally likely to produce higher or lower readings, the differences will average each other out.

By expanding this simple concept it is possible to determine rather precisely whether differences observed in the average speed of hourly samples are real or merely due to chance. By computing the total amount of variation of the hourly samples from the estimated true mean we may reach decisions as to whether differences between hourly time periods are real or merely due to chance. The further the observed variation departs from zero, the greater the likelihood that the differences are real, produced by some combination of causal factors. The same reasoning may be applied to periods of a day, month, or week by treating the interval to be tested as the sampling period.

Suppose we wish to find the answer to a problem such as this: We determine that the difference between hourly mean speeds is real and cannot be accounted for by chance alone. Now, taking this difference into consideration, if we have three different days with 10 hourly

samples each, are the differences between these daily average speeds also real? Such a question may be answered satisfactorily by taking into account the amount of difference already found between hours.

The statistical techniques for accomplishing this are beyond the scope of our descriptive purpose here. However, it will suffice to say that differences between hours, days, and months can be examined at the same time the differences between the other items in the problem being used as a kind of corrective device.

Chance or Real Differences?

One more concept should be clarified. If we do find differences between various factors such as a group of hourly mean speeds, at what point do we decide they are not due to chance and assert them as real differences? In any set of samples it is highly unlikely that we would ever find that the differences were *perfectly random*. Since perfect randomness would produce a variation which would come close to zero, we must decide how far we can permit the variation to depart from zero before we will accept the difference as a real one.

Probability theory provides our method for making decisions in this case. By utilizing statistical measures we may determine for any degree of variation the probability of its occurring. We normally state this in the form of a decimal fraction such as .01. In more common language it means that there is one chance in a hundred that a variation as large or larger than the one observed would occur by accident or that the "odds" are 99 to one that the differences are real.

A word of caution is necessary at this point. While techniques such as those described here provide the necessary evidence of where real differences occur, they do not explain the cause of the differences. Causation must be determined by a careful assessment of all factors at work in the real world.

We have related speed changes to time intervals—hours, days and months. The fact that real differences are found among these time intervals does not, of course, specify causation except in the most general sense. The fact that speed changes are related to the time interval during which they were gathered is of singular importance even though it does not specify the many factors which produce these differences.

Results

Several different sets of data were tested to determine where real differences appeared. The first four sets were as follows:

Set 1. Passenger cars — Days 8:00 a.m. - 4:00 p.m.; Total 240 hours.

Set 2. Passenger cars — Nights 5:00 p.m. - 11:00 p.m.; Total 180 hours.

Set 3. Trucks—Days 8:00 a.m. - 4:00 p.m.; Total 240 hours.

Set 4. Trucks — Nights 5:00 p.m. - 11:00 p.m.; Total 180 hours.

For each set the following hypotheses were tested.

1. That the variation between all hours, allowing for variation between months and days, was not large enough to be significant.
2. That the variation between all days, allowing for variation between months and hours, was not large enough to be significant.
3. That the variation between all months, allowing for variation between hours and days, was not large enough to be significant.

The results may be summarized as follows:

From an examination of the data in Exhibit 1 we may conclude that, with the possible exception of the daily and hourly means for trucks in the daytime, the differences in mean speeds are larger than can be accounted for by chance. In other words, the difference in hourly mean speeds, even after we remove any possible effect produced by differences between days and months, is too great to be the result of chance fluctuation. Similarly, we may say the same thing about daily mean speeds and monthly mean speeds.

At the same time the data for the sets described above were processed to ad-

Exhibit 1

Summary of Differences In Mean Speeds

Data Set	1 Test	Probability That Difference is Real	
1. Cars (Days)	Hourly Mean Speed Different	.01	99 - 1
	Daily Mean Speed Different	.01	99 - 1
	Monthly Mean Speed Different	.01	99 - 1
2. Cars (Nights)	Hourly Mean Speed Different	.01	99 - 1
	Daily Mean Speed Different	.01	99 - 1
	Monthly Mean Speed Different	.01	99 - 1
3. Trucks (Days)	Hourly Mean Speed Different	.05	19 - 1
	Daily Mean Speed Different	.05	19 - 1
	Monthly Mean Speed Different	.01	99 - 1
4. Trucks (Nights)	Hourly Mean Speed Different	.01	99 - 1
	Daily Mean Speed Different	.01	99 - 1
	Monthly Mean Speed Different	.01	99 - 1

ditional sets of data for cars. These consisted of the following:

Set 5. Passenger Cars — 8:00 a.m. - 4:00 p.m. Monday, Tuesday, Thursday, Friday.

Set 6. Passenger Cars — 8:00 a.m. - 4:00 p.m. Tuesday, Thursday.

The purpose of these tests was to determine whether there was any combination of days for which some of the differences previously determined were not material. The results are summarized in Exhibit 2.

The data contained in Exhibit 2 suggests the following conclusions:

1. The difference in monthly mean speeds are large enough to be material in all cases.
2. The differences between Monday, Tuesday, Thursday and Friday mean speeds are real and material.
3. The differences between hourly mean speeds are not material for these days if allowance is made for differences arising from changing days of the week and month.
4. The variation in daily mean speed between Tuesday and Thursday is not material if allowance is made for differences arising from changing days of the week and month.

It should be noted that the conclusions reached for Set 5 differ substantially from the conclusion reached using Set 1. We attribute this difference to the fact that Set 1 contained a Wednesday sample

Exhibit 2

Summary of Differences In Mean Speeds

Data Set	Test	Probability Difference is Real	
5. Cars (Days)	Hourly Mean Speed Different	Not Significant	
	Daily Mean Speed Different	.01	99 - 1
	Monthly Mean Speed Different	.01	99 - 1
6. Cars (Days)	Hourly Mean Speed Different	.05	19 - 1
	Daily Mean Speed Different	Not Significant	
	Monthly Mean Speed Different	.01	99 - 1

taken under abnormal weather conditions. It is quite possible that the effect of weather on the Wednesday samples was sufficient to override the effect of the normal days included in the sample, and thus produced the significant hourly effect apparent in Set 1. This point will be explored more fully when complete data is available.

Implications and Future Action

The work thus far deals with an approach to the problem of sampling and measurement of speed data using fixed-point techniques. The most important conclusion is that the variation within samples taken at the same location under the same weather conditions, etc., but at different periods of time cannot be used to interpret the significance of a difference in the means of samples. *For instance, samples taken at the same location a month or year apart will tend to be unreliable as a measure of changes produced by a newly introduced variable.*

The quality of sampling can be improved by matching hours of the day, days of the week, and months of the year, as well as location. In the collection of fixed-point speed samples there appear to be no great difficulties in matching sampling times in terms of hour, day and month, or in terms of weather conditions and location. In this case samples should be collected within fixed-time intervals rather than solely in terms of some minimum satisfactory number of observations. The danger in relying upon a minimum satisfactory number of observations alone is that as the sample size grows, the differences in sample mean speeds reflect not only true changes in speed behavior over the interval between sampling periods, but also the changes in mean speed arising from differences in the hourly, daily and monthly variables.

The implications raised by these conclusions are disturbing. With such variability inherent in the data, fixed-point speed measurements have limited value as a research tool unless corrective measures can be utilized. Unfortunately this question cannot be given the positive answer it deserves until complete data for this project become available in November of this year. Two things may be expected to be accomplished when the complete data are available:

1. Limits within which true speed values may be expected to fall can be established, thus serving to specify the limits within which fixed-point measuring techniques can be used as a research tool.
2. Correction factors may be developed which can be used to eliminate the bias that occurs because of daily, hourly and monthly variation.

From a study of the currently available data it would appear that both of these can be achieved. ★

House Approves Gas Tax Increase

The U. S. House of Representatives has approved the Federal-Aid Highway Act of 1959 calling for a one-cent increase in the Federal gasoline tax over the next 21 months.

By unanimous consent, it accepted several amendments tacked on by the Senate.

The one-cent increase in the Federal gasoline tax called for in the bill became effective as of October 1, and will run until July 1, 1961.

The bill also provides that one-half the revenue derived from the 10 per cent Federal tax on new cars and 62.5 per cent of the eight per cent tax on automotive parts and accessories will be transferred to the Highway Trust Fund for three years beginning July 1, 1961.

Other Senate amendments provide for (1) authorization for an additional $2 million to be appropriated out of general funds for parkways for the 1960 fiscal year; (2) a study by the Secretary of Commerce of the need for extension of the Interstate System within Alaska and Hawaii and a report to Congress by January 14, 1960.

Right Shoulder GUIDE LINES

Use of this type of road marking has increased 21 percent since the end of 1958, a 42-state survey reports

USE OF RIGHT shoulder guide lines for greater safety on the nation's highways has jumped 21 per cent since the end of 1958, a newly-completed survey of state highway officials reveals.

Total miles of reflectorized pavement edge markings utilized to reduce traffic fatalities and lower maintenance costs have increased to 60,600 from some 50,000 at the end of last year.

Used in 41 States

Forty-two of the 50 states participated in the survey, made by the Cataphote Corporation of Toledo, Ohio and Jackson, Mississippi, manufacturer of reflective traffic markings. Only nine states indicated they do not yet employ edge markings as a low-cost, easily-accomplished safety measure. Thirteen road administrators announced increases in edge markings which ranged from 25 to 3,500 road miles.

Advantages of guide lines cited by highway officials ranged from better lane placement during low visibility conditions to reduced maintenance on shoulders. Enthusiasm for edge markings extends beyond that of public officials since the survey shows public reaction has been highly favorable.

One state credited guide lines with a 15 per cent reduction in accidents. In this area the public has urged officials to extend the program.

Another state reported "less damage to bridges and a low accident rate on previous high accident locations" since installation of the markings in a test area.

"The Bureau of Public Roads, in its report detailing 'The Federal Role in Highway Safety,' emphasizes that the higher speeds and heavier volume of traffic now common have made earlier standards of signing almost wholly obsolete," Charles E. Searight, vice president of Cataphote, declared. "Certainly right shoulder guide lines represent an important advance in the continuing search for new traffic engineering techniques which will help keep highway deaths to the smallest number possible."

Average cost of painting edge markings on roads is less than $150 a mile, Searight noted, "a small price to pay for improving driver visibility and confidence, particularly under such adverse conditions as rain and darkness."

Twelve states reported more than 1,000 miles with reflective edging—Ohio 14,502; Maryland 4,100; North Carolina 3,500; Illinois 3,300; New Jersey 3,071; Florida 2,500; Wisconsin 2,000; Utah 1,800; Connecticut 1,500; Minnesota 1,300; Alabama 1,200; and Michigan 1,100. ★

TRAFFIC TOLL CONTINUES UP

Fatalities for first seven months of 1959 are five per cent higher than for the same period last year—injuries total 700,000

THE NATION'S traffic death toll rose again in July for the seventh straight month, the National Safety Council reported at the beginning of September.

The July increase was 4 per cent—3,340 deaths this year against 3,210 in July last year. The steady climb in highway fatalities began in January after a continuous two-year improvement. Monthly increases in 1959 have ranged from 2 per cent in February to 9 per cent in March.

The death toll at the end of the first seven months of this year stood at 20,430. This was 5 per cent—or 940 deaths—more than the toll of 19,490 for the same period last year.

The council estimated that disabling injuries from traffic accidents in the seven-month period totaled 700,000.

Motor vehicle travel in the first seven months of 1959 was 5 per cent greater than in the same period last year, the council estimated. Since this increase was the same as the rise in deaths, the mileage death rate for the period was the same as last year—5.1. This is the lowest rate on record for a similar period.

"One obvious fact stands out in any study of the traffic accident problem," said Howard Pyle, president of the Council. "The ultimate and only sure-fire solution to the problem is—people.

"Safer highways, safer cars and more effective enforcement are essential, of course, if we are to reduce the traffic toll. But all these can't keep a driver from having an accident unless he himself is determined not to have one."

The increase in deaths is occurring principally in rural areas, the council said. In June rural deaths were up 6 percent, while urban deaths showed no change. For seven months rural deaths were up 6 per cent, while urban deaths increased 2 per cent. Of the 940 increase in deaths in seven months, about 850 of them occurred in rural areas.

In July states showing increases outnumbered those with decreases 33 to 14. One state showed no change.

For seven months 33 states showed increases, while 15 had decreases. The states with decreases for seven months were:

Louisiana	—23%
Maine	—15%
Minnesota	—14%
South Dakota	—14%
Alaska	—14%
Idaho	—10%
Massachusetts	— 8%
Ohio	— 5%
Missouri	— 3%

Washington	— 3%
Florida	— 2%
Illinois	— 1%
New Jersey	— 1%
Oklahoma	— 1%
Nebraska	— 1%

Of 701 cities reporting in July, 122 had decreases in deaths, 462 had no change and 117 showed increases. For seven months 249 cities had decreases, 210 showed no change and 242 reported increases.

The following cities of more than 200,000 population had fewer deaths for the seven-month period this year:

Rochester, N. Y.	—69%
Norfolk, Va.	—50%
Toledo, Ohio	—40%
Jacksonville, Fla.	—38%
Seattle, Wash.	—36%
Minneapolis, Minn.	—33%
Dayton, Ohio	—33%
Pittsburgh, Pa.	—32%
Akron, Ohio	—31%
St. Paul, Minn.	—30%
Buffalo, N. Y.	—29%
Providence, R. I.	—20%
Dallas, Tex.	—19%
Long Beach, Calif.	—19%
Oklahoma City, Okla.	—19%
Baltimore, Md.	—17%
New Orleans, La.	—16%
Wichita, Kan.	—14%
Richmond, Va.	—13%
San Diego, Calif.	—10%
Denver, Colo.	— 8%
Los Angeles, Calif.	— 7%
Atlanta, Ga.	— 7%
Boston, Mass.	— 6%
Philadelphia, Pa.	— 5%

In July, 529 of the reporting cities had perfect records. The three largest were Rochester, N. Y. (345,600); Long Beach, Calif. (336,100), and Grand Rapids, Mich. (212,300).

At the end of seven months 247 of the cities still had perfect records. The three largest were Lincoln, Neb. (119,600); Peoria, Ill. (114,000), and East Orange, N. J. (85,900).

The leading cities in each population group at the end of seven months, ranked according to the number of deaths per 10,000 registered vehicles, were:

	Reg. Rate
Over 1,000,000 Population	
Los Angeles, Calif.	2.7
Chicago, Ill.	2.8
Detroit, Mich.	2.8
750,000-1,000,000 Population	
St. Louis, Mo.	2.3
Washington, D. C.	2.9
Cleveland, Ohio	2.9
500,000-750,000 Population	
Minneapolis, Minn.	1.5
Seattle, Wash.	1.5
Milwaukee, Wis.	2.0
350,000-500,000 Population	
Indianapolis, Ind.	1.5
Denver, Colo.	1.8
Memphis, Tenn.	2.2
200,000-350,000 Population	
Rochester, N. Y.	0.5
Toledo, Ohio	0.7
Wichita, Kan.	0.7
100,000-200,000 Population	
Peoria, Ill.	0.0
Lincoln, Neb.	0.0
Canton, Ohio	0.3
50,000-100,000 Population	
Cedar Rapids, Iowa	0.0
Racine, Wis.	0.0
Muskegon, Mich.	0.0
25,000-50,000 Population	
Billings, Mont.	0.0
Wyandotte, Mich.	0.0
Vancouver, Wash.	0.0
10,000-25,000 Population	
Englewood, Colo.	0.0
Santa Cruz, Calif.	0.0
Salinas, Calif.	0.0

TRAFFIC TRAINING CALENDAR

NOVEMBER 2-20: Driver License Examining Administration—Unit 1; Traffic Institute, Evanston. The first of four, three-week units in driver examining administration given annually over a four-year period. The course is designed for chief examiners, supervisors, and examiners who will be promoted.

NOVEMBER 30-DECEMBER 18: Traffic Law for Police; Traffic Institute, Evanston. Instruction in the legal aspects of traffic law enforcement. Includes legal rights, duties, and authority of the police in traffic supervision with specific citations of appropriate case law.

JANUARY 4-FEBRUARY 5: Introduction to Police Management; Traffic Institute, Evanston. Covers management principles as adapted to police service. These include methods of planning; organization of activities; staff work; and the development and use of policies and procedures as performance guides.

JANUARY 25-FEBRUARY 5: Police Supervision; University of California, Berkeley, Calif. Open to supervisory officers, staff officers with training or personnel duties, and men about to be promoted to these positions. Includes the major aspects of supervision—directing, improving, evaluating, reporting, and human relations.

FEBRUARY 1-5: Western Region Traffic Court Conference; University of California, Los Angeles, Calif. For judges, justices of the peace, prosecutors, lawyers, court officials, and selected police officers. Held in cooperation with the Traffic Institute and the American Bar Association Traffic Court Program.

Cute Little Killers

Beware of the "cute little" motorized cars youngsters of 7 and up—or down — are so happily driving these days. They can be killers, according to a warning issued by the National Safety Council.

"Some of these miniature automobiles are so heavily powered they can go 40 and 50 miles an hour," said Gen. George C. Stewart, executive vice president of the council. "That's too fast for any youngster under 16 to drive anywhere, anytime, and parents are only begging for trouble when they permit a child to do it.

"We realize that some of these little cars won't go more than five miles an hour. There is an understandable feeling by some parents that such a car can be driven safely by a 7-year-old child in his own back yard," Stewart continued.

"This may be true—assuming that an active 7-year-old boy or girl would be content to stay in the back yard and never venture onto the sidewalk or into the street.

"But the variation in circumstances, ages, conditions and types of these little cars and their drivers are so great that there is only one really safe rule for their use — don't use them!"

There are designated places where children can race the little motorized cars in kiddie-set drag races, the council said. This is done under supervision and with safety precautions. Parents were urged not to permit their children to participate in such events.

KNOW THE LAW . . .

(Continued from page 19)

highway is that it is a way over which the public at large has the right to pass. . . . (Citations omitted.) Accordingly, the term 'highway' is ordinarily used in contradistinction to a private way, over which only a limited number of persons have the right to pass."

Emphasize 'Use'

Courts, when called upon to define "public highway" or "highway" in many instances emphasize the character of use to which the property is put. When this test is applied, the term "public highway" has an extensive application and covers any type of roadway to which the public has access. Under this test a privately owned roadway open to the public by and with the owner's consent and generally used by the public as a means of vehicular travel will be a public highway and a place where traffic laws apply. An example is the case of *Crossler v. Safeway Stores*, 51 Idaho 413, 613 P.2d 151, 80 ALR 463 (1951).[5] In that case the Supreme Court of Idaho held that traffic laws applied to the driveway on the University of Idaho property, stating:

" 'The object of the law is to prescribe a rule of conduct for the convenience and safety of those who may have occasion to travel and actually travel with carriages on a place adapted to and fitted for travel, and actually used for that purpose, by a public laying out or by dedication of the owners, or the actual permission and license of the owners, for the time being. . . . The same reason applies to private roads, actually used, as to public roads, that is, roads to which the public have a permanent right, by laying out by prescription, or by dedication.' * * *

" 'The same considerations apply to courts and places in cities, paved and adapted to the purpose of travel, but upon which the owners choose to maintain a gate, to be occasionally closed, to rebut the presumption of a dedication. The owners may close them if they think fit, but when in fact they are open, and all persons are permitted by a general license to use them, they are roads, and the reason applicable to other roads applies to them.' * * *

". . . we are of opinion that . . . the power which a municipality has to regulate the use of vehicles or other means of transportation within city limits is not limited to the geographical boundary lines of dedicated streets and alleys. In the instant case we have a *de facto* highway. To all intents and purposes it is a public highway, opened up for public use and consent of the University for its convenience and for the convenience of the public at large, and is and has been so used by the public in the same manner and to the same extent as all other streets, alleys and highways within the boundaries of the municipality, and thereby becomes subject to its police power and to its control and regulation by valid ordinances."

Another 'de facto' Case

Or as expressed in *State ex rel Audrain County v. City of Mexico*, 355 Mo. 612, 197 S.W.2d 301 (1946):

"As previously ruled in this State: The law of the road extends to all public highways, de jure or de facto, embracing ways on private property if used for public travel. The necessity for regulation inherent in the use permitted gives rise to and makes the police power applicable to private land when used as a de facto public highway."

The courts in the above two cases describe one type of way as a *de facto* highway, in other words one that exists through public use though not formally dedicated to the public as such. Con-

5. An earlier example along the same lines is Weirich v. State, 140 Wis. 98, 121 N.W. 652, 22 LRA (NS) 1221, 17 Ann.Cas. 802 (1909) in which a toll road was held to be a public highway, the court remarking, "that the term 'public highway' was used (in the statute) in a sense as broad as the mischief to be guarded against, which was just as significant as to toll roads as ordinary highways." "Public highway" in its broad popular sense, the court stated, should include any road which the public have a right to use even conditionally.

trasted to this is a highway which is said to be *de jure*, or a highway existing of right. Some courts have held that a highway is not "public" for purposes of traffic law enforcement until it is actually of this latter kind. Under this rule a highway must be actually dedicated to the public use before it will be subject to traffic law enforcement.

Conviction Set Aside

Thus in *State v. Root*, 132 Oh.St. 229, 6 N.E.2d 979 (1937), where a death was caused through the operation of an automobile, a conviction for manslaughter was set aside because the offense was committed on a roadway situated on the grounds of the state hospital. In reversing the conviction the Supreme Court of Ohio placed a strict construction on the meaning of the term "highway," holding that the roadway in the hospital grounds was private rather than public in nature. Said the court:

> "The essential facts as to the driveway in this case were not disputed. The driveway was located wholly on hospital grounds. It was built and maintained by the hospital. It could be relocated or vacated at any time by the hospital and the ground used for other purposes. According to the record, it was never supervised or controlled by the traffic or highway authority of city, county or state. It appears to have been built by the hospital primarily for the use of the hospital, its employees and whoever else might have business with the hospital. In this respect it may be said to be a hospital driveway rather than a road or highway to be traveled by the public generally. This is further attested by the fact that it is only about 1,500 feet long and ends in a circle where motor vehicles may turn around. That is the character of this driveway when viewed from its physical aspects.
>
> "Now let us survey this driveway from a strictly legal standpoint. It was never dedicated or created by any legislative authority as a road or highway. It is not found recorded on any plat of roads or highways of city, county or state. Although it lies wholly within the corporate limits of the city of Cincinnati, there appear to be no ordinances regulating traffic or limiting parking on such driveway. We do not find from the record that it is listed as street, township road, county or state highway.
>
> "The state claims that since the driveway in question was built by Longview Hospital with public funds that it thereby became a public highway within the meaning of the statute. It is negatived in this case, however, for the reason that the record fails to show that the General Assembly ever granted permission to establish a 'street, alley or road' in the place where this driveway is located, as provided by Section 23, General Code, which reads as follows: 'A street, alley or road shall not be laid out or established through or over the lands belonging to a public institution of the state without the special permission of the general assembly.'
>
> "This does not mean, of course, that Longview Hospital had no right to construct this driveway for its own use and that of the public, but it does clearly indicate that such driveway is not to be regarded as a public road or highway in the sense in which such terms are generally used."

By statute many states provide that a public highway shall be one that is not only used by the public but also is *publicly maintained*.[6] This definition is the one set forth in the Uniform Vehicle Code (Section 1-122, 1956 Ed.) in which a highway is designated as "the entire width between the boundary lines of each way *publicly maintained* when any part thereof is open to the use of the public for purposes of vehicular travel." (Emphasis supplied).

6. This test is adopted in Prillaman v. Commonwealth, 199 Va. 401, 100 S.E.2d 4 (1957), in which the court held: "There must be common enjoyment on the one hand and the duty of public maintenance on the other." In this case the driveway on a privately operated service station was held not to be a public highway.

If the theory of use as expressed in *Crossler v. Safeway Stores*, supra, governs this situation, then since shopping center roadways are open to public use they will be held to be within the framework of traffic laws. If on the other hand a more restrictive test is applied, such as that of prescription in *People v. Root*, supra, or if by statutory definition public maintenance is made a determining factor, then the answer will have to be otherwise.

Property Held 'Private'

Whether shopping center lanes are governed by traffic laws was the issue in *Stinson v. Columbus & Chicago Freight, Inc.*, 125 N.E.2d 881 (Oh.App.-1952). In this case a collision occurred between a taxicab and a truck at an intersection of driveways on the privately owned Lane Shopping Center in Columbus, Ohio. On appeal the question was whether the right of way rules applied at the intersection. The Ohio Court of Appeals held they did not, since the property on which the accident occurred was privately owned.

In so holding the Ohio Court of Appeals was applying the rule previously set out in *People v. Root*, supra, that traffic laws do not apply to roadways on private property. The court also cites as authority *Glaser v. Dunlap*, 83 N.E.2d 669, decided by the Municipal Court of Dayton, Ohio, in 1948, holding traffic laws did not apply on a parking lot maintained by the Frigidaire Corporation for its employees. . .[7]

In *People v. Tracey*, 6 Misc.2d 681, 167 N.Y.S.2d 320 (1957), defendant was prosecuted for reckless driving because of certain acts committed "on a privately owned parking area of a plaza containing several stores" in the city of Niagara Falls. Under Section 58 of the Vehicle and Traffic Law of New York the offense of reckless driving could only be committed on a highway. The Niagara County Court set aside defendant's conviction in the Niagara Falls police court, stating in its opinion:

"Section 58 prohibits driving which 'unreasonably interferes with the free and proper use of the public highway.' The appeal is based upon defendant's contention that the driving did not take place on a public highway. His contention must be upheld and the conviction must be reversed.

"Section 2 of the Vehicle and Traffic Law defines a public highway as including 'any highway, road, street, avenue, alley, public place, public driveway or any other public way.' In *People v. Westchester County*, 282 N.Y. 224, 26 N.E.2d 27, the Court, while considering an entirely different question, noted that a public highway is one over which the public has a general right of passage in motor vehicles, regardless of whether such right was established by prescription, dedication, or under the right of eminent domain. The implication is that if no such right has been established by prescription, dedication, or eminent domain, then the highway is not public.

"Such interpretation is borne out by other cases. In *Weeks v. Byrnes*, Co. Ct., 33 N.Y.S.2d 65, 67, the Erie County Court held that a parking lot adjacent to an A. & P. store was not a public highway, stating that 'It appears that the ultimate test is the right to unrestricted use by the public except for the usual police regulations. The public has no unrestricted use as to this private parking space.' "

Other New York Cases

This decision is in line with a number of other New York cases following the stricter rule. In *Weeks v. Byrnes*, 33 N.Y.S.2d 65 (Erie Co.Ct.-1942) a parking lot adjacent to an A. & P. store was held outside the scope of traffic regulation; as was the roadway on the grounds of the Saratoga race track in *Sylvester v. Brockway Motor Truck Corporation*, 232 App.Div. 364, 250 N.Y.S.35 (1931). Likewise in *Catalano v. Maddux*, 175

7. See also Rivera v. Hancock, 79 Ariz. 199, 286 P.2d 199 (1955). Driveway leading up to Reynolds Aluminum plant held to be private, rather than public roadway.

Misc. 24, 22 N.Y.S.2d 149, (City.Ct. N.Y.-1940), a road on grounds of the New York World's Fair was held to be on private property and not subject to traffic regulation.[8]

However, later New York cases do not follow the rules of strict construction. For example, in *Mullen v. Fayette*, 274 App.Div. 527, 85 N.Y.S.2d 64 (1948) a roadway on a housing project built and owned by the federal government was held to be a place where traffic laws apply, the Appellate Division of the Supreme Court (Essex County) remarking:

> "The term highway means a way open to all the public without distinction for passage and repassage at their pleasure. The ownership of a highway is immaterial in determining its character as such, in legal contemplation it may be a highway, whether it is owned by a private corporation, or one owned by the government or a governmental corporation." [9]

Not Public Highways

The theory of the private property cases is that since the owner of the property might at his pleasure close such roads and driveways and bar the public therefrom, they are not *public* highways. This theory has in effect been adopted and applied to shopping center areas in *Stinson v. Columbus & Chicago Freight, Inc.*, supra, and *People v. Tracey*, supra, and explains why the court in each instance held traffic regulations not applicable on shopping center roadways.

A view more appropriate to modern conditions is held by those courts which point out that as long as public use is permitted, the way maintains the character of a public way, no different from those actually owned and maintained by public authority, even though public use might be denied by the owner at any time. Until that happens they are public in character and users thereof are entitled to the protection of the rules of the road. Title to the land involved, or the character of its ownership, whether public or private, is immaterial in this connection. Cases to this effect are collected in the following authorities: 60 C.J.S., Motor Vehicles, sec. 20, nn. 57-61; 25 Am.Jur., Highways, sec. 5, p. 340; Note: 80 ALR 469 and ALR Digests, Highways, sec. 3.

Should Laws Apply?

The reasons for imposing traffic rules and regulations upon users of roads, i.e., to prevent collisions and protect the lives and property of such users, certainly apply to these shopping center roads. A distinction is to be drawn between a company parking lot, for example, provided by an employer for his own employees, and a shopping center pattern of roads and driveways used, to all intents and purposes, as a public road which the motoring public may use without let or hindrance. Many court decisions have held that the rules of the road extend to all public ways, however created, and even to roads which are not strictly public in the sense of public ownership of the ground, provided they are used for travel by the general public.[10] The ownership of a highway is immaterial in determining its *character*. The reasons for these

8. Contra: Canard v. State, 174 Ark. 918, 298 S.W. 24 (1927). Roadway in fair grounds held to be public highway.
9. See also People v. Garland, 84 N.Y.S.2d 72, (City Magistrate's Ct., New York City-1948).
10. *Cal.* Villegas v. Strohn, 112 Cal.App. 633, 297 P. 588 (1931).
Ga. Baker v. State, 92 Ga.App. 60, 87 S.E.2d 644 (1955); State v. Toll Bridge Authority, 210 Ga. 690, 82 S.E.2d 626 (1954); City of Statesboro v. Dorman, 203 Ga. 25, 45 S.E.2d 403 (1947).
Md. State v. Potomac Edison Co., 166 Md. 138, 170 A. 568 (1934); Town Commissioners of Centreville v. County Commissioners of Queen Anne's County, 199 Md. 652, 87 A.2d 599 (1952), quoting from State v. City of Mexico, 355 Mo. 612, 197 S.W.2d 301, 304 (1946).
Me. Littlefield v. Hubbard, 124 Me. 299, 128 A. 285, 38 ALR 1306 (1925).
Minn. Bosell v. Rannestad, 226 Minn. 413, 33 N.W.2d 40, 43 (1948).
Mo. Crocker v. Jett, 93 S.W.2d 74, 76 (Mo.-1936); Phillips v. Henson, 326 Mo. 282, 30 S.W.2d 1065 (1930); City of Clayton v. Nemours, 353 Mo. 61, 182 S.W.2d 57, 60 (1944). See also: State v. City of Mexico, 355 Mo. 612, 197 S.W.2d 301 (1946), and Eoff v. Sentner, 317 S.W.2d 667, 671 (St. Louis Ct.App.-1958).
Neb. Becks v. Schuster, 154 Neb. 360, 48 N.W.2d 67 (1951); Koutsky v. Grabowsky, 150 Neb. 508, 34 N.W.2d 893 (1948); Nygaard v. Stull, 146 Neb. 736, 21 N.W.2d 595 (1946); Bresley v. O'Connor, Inc., 163 Neb. 565, 80 N.W.2d 711, 718 (1957).
Tex. Nichols v. State, 49 S.W.2d 783 (Tex.-Cr.-1932).
U.S. O'Sullivan v. Brown, 171 F.2d 199 (U.S.Ct.App.-Tex. 1948).

decisions are obvious—the public is entitled to protection of the traffic rules regardless of whether the particular road is technically a highway, or is only a *de facto* highway. It is the *type of use* that determines its character as a highway, a road or a street, within the meaning of traffic laws. Fine-spun technicalities should not be controlling when the protection of the traveling public is at stake.

Traffic laws and regulations are placed in existence through the action of the various state legislatures. What they shall be and how they shall operate is properly a matter of legislative concern.

Need New Definition

The courts may interpret the law so as to apply traffic regulations in a liberal, realistic manner to effectuate their purpose. However, while some courts do follow the use theory in determining where traffic laws apply, the one sure way to insure this result is to have the state traffic codes provide the courts with a definition of this character. The present Uniform Vehicle Code definition of "Highway" could accomplish this if only two words — "publicly maintained" — were stricken, leaving the sentence to read: "The entire width between the boundary lines of every way when any part thereof is open to the use of the public for purposes of vehicular travel." (Sec. 1-122 (1950).) Such a definition places emphasis on public use and does not bring into issue any question of public maintenance, formal dedication, or ownership of the ground.

If and when such a definition is supplied in the various traffic codes, courts will be free to hold that shopping center lanes are quite generally subject to traffic regulations. Until this is accomplished, it will be necessary for the individual courts to decide whether a theory of use is to be adopted or whether some more restrictive test, such as prescription or public ownership and maintenance, shall apply.—*Leo E. Smith* ★

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ABA Announces Court Awards

Forty cities and two states have been cited by the Traffic Court Program of the American Bar Association for outstanding achievement in traffic court activity.

First and second place awards and honorable mention designation were made on the basis of population groups by the ABA. The citations were based on reports from 1,239 cities participating in the National Safety Council's Annual Inventory for Traffic Court Activities.

Cities receiving the awards were:

Group III: San Diego, California, 1st place; Minneapolis, Minnesota, 2nd place; Pittsburgh, Pennsylvania, honorable mention.

Group IV: No 1st or 2nd place awards; Denver, Colorado; Kansas City, Missouri, and Portland, Oregon, honorable mention.

Group V: Oklahoma City, Oklahoma, 1st place; Grand Rapids, Michigan, and Flint, Michigan, 2nd place; Fort Worth, Texas, honorable mention.

Group VI: Evansville, Indiana and Arlington, Virginia, 1st place; Albuquerque, New Mexico, 2nd place; Montgomery, Alabama; Shreveport, Louisiana, and Waco, Texas, honorable mention.

Group VII: Royal Oak, Michigan, and Manchester, New Hampshire, 1st place; Inglewood, California, and Springfield, Ohio, 2nd place; Pueblo, Colorado; Saginaw, Michigan; Columbia, South Carolina; Warren, Ohio; Ogden, Utah, and Wichita Falls, Texas, honorable mention.

Group VIII: Birmingham, Michigan, 1st place; Pocatello, Idaho, LaFayette, Louisiana, 2nd place; East Lansing, Michigan; Grand Forks, North Dakota; Shaker Heights, Ohio; Enid, Oklahoma, honorable mention.

Group IX: Boulder, Colorado, and Ravenna, Ohio, 1st place; Westport, Connecticut and Ponca City, Oklahoma, 2nd place; Winnetka, Illinois; Collingswood, New Jersey and Ypsilanti, Michigan, honorable mention.

No awards were given in Groups I, II and X.

The ABA committee announced awards to Connecticut and Illinois for legislative programs involving traffic court activity. A special award went to the Office of State Court Administrator in New Jersey, headed by Edward B. McConnell, for continued excellence in the administration of courts trying traffic cases.

Accident Rate Climbing To New Record?

There will be more automobile accidents in the United States in the next six years than there are cars in the nation.

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If the rate of increase continues at the present pace, accidents in the next six years will cost more than 40 billion dollars, and may go as high as 50 billion dollars for 70 million accidents.

If this figure proves out, there will be nearly 12 million auto accident victims, killed and injured.

The severity of auto accidents has increased with speed and modernization of highways, so that the countrywide average cost for each claim has risen 20 per cent in the last five years, the N.A.I.I. reported.

Inflation is reflected not only in increased amounts of repairs, but in jury awards, and the fact that medical costs have risen 33 to 50 per cent.

Some cars, the Institute said, now have eight lights in the front and six on the rear, where they used to have only two at each end. The windshield of the most popular car in 1947 cost $10. Today, the same windshield costs $90.

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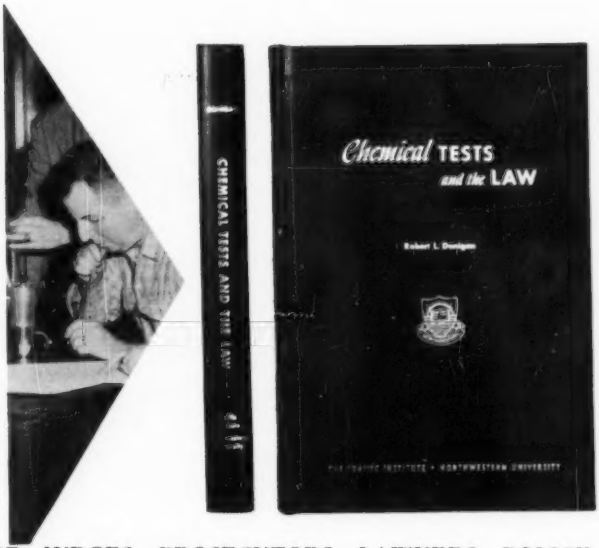

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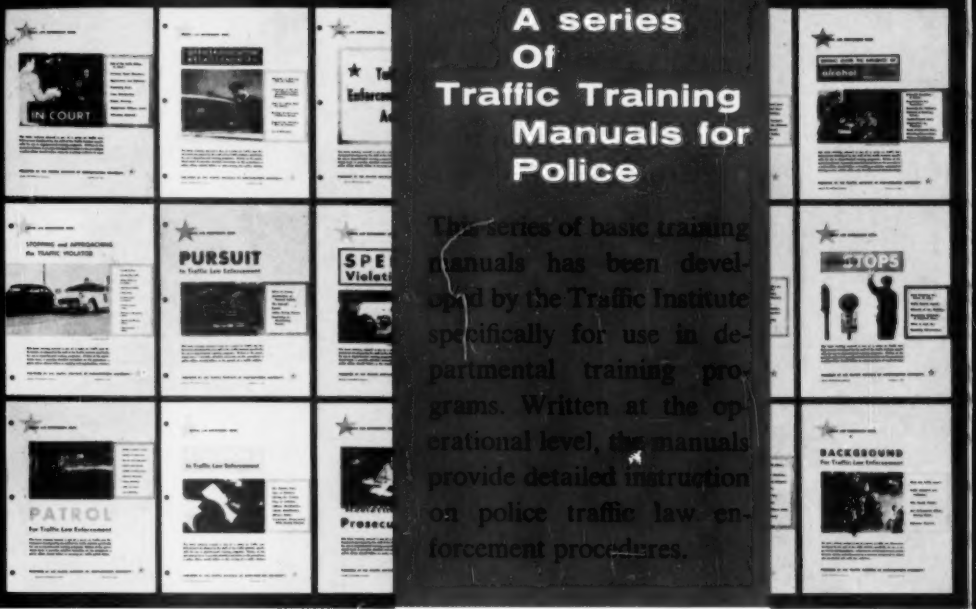

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